

## ABSTRACT OF THE DISCLOSURE

A method and apparatus are provided for aligning optical elements or microbeads, wherein each microbead has an elongated body with a code embedded therein along a longitudinal axis thereof to be read by a code reading device. The microbeads are aligned  
5 with a positioning device so the longitudinal axis of the microbeads is positioned in a fixed orientation relative to the code reading device. The microbeads are typically cylindrically shaped glass beads between 25 and 250 microns ( $\mu\text{m}$ ) in diameter and between 100 and 500  $\mu\text{m}$  long, and have a holographic code embedded in the central region of the bead, which is used to identify it from the rest of the beads in a batch of beads with many different chemical  
10 probes. A cross reference is used to determine which probe is attached to which bead, thus allowing the researcher to correlate the chemical content on each bead with the measured fluorescence signal. Because the code consists of a diffraction grating typically disposed along an axis, there is a particular alignment required between the incident readout laser beam and the readout detector in two of the three rotational axes. The third axis, rotation about the  
15 center axis of the cylinder, is azimuthally symmetric and therefore does not require alignment.